

ART. VI.—*The Freshwater Shells of New Zealand belonging to the Family Limnæidæ.* By Professor F. W. HUTTON.

[Read before the Philosophical Institute of Canterbury, 5th June, 1884.]

Plate XII.

THE New Zealand *Limnæidæ* are not very numerous in species although they are usually very variable. *Limnæa* is rare, or abundant only in a few localities. *Aplexa* is far more common, but not nearly so abundant as *Potamopyrgus*. Our single species of *Planorbis* is so small it may easily be overlooked, but it does not appear to be common. I have to thank Mr. H. M. Gwatkin for sending me odontophores of the British *Limnæidæ* without which I should have hesitated to name some of our species.

LIMNÆA (AMPHIPEPLEA) ARGUTA, sp. nov. Pl. xii., fig. 1.

Shell globosely ovate, glossy horn brown when dry, dark olive green when alive; rather strongly longitudinally striated, and without any spiral lines. Whorls 3 or $3\frac{1}{2}$, the last inflated, spire very short, slightly acute, usually eroded at the apex, suture moderate, simple. Aperture large, ovate, occupying three quarters of the entire length of the shell; columella arcuate, with a well-marked spiral fold; inner lip reflexed over the umbilical region, and connected with the lip above by a thin white callosity. Length .3; diameter .18; aperture, long .24, broad .17 inch.

Hab. River Avon, Christchurch.

Animal olive brown sparingly speckled with yellowish white. Edge of the mantle simple, slightly reflected over the shell. Foot broad and rounded behind; tentacles short, flat, triangular, with the eyes at the inner bases.

Dentition (pl. xii., fig. 10), 23–1–23, of which about 9 are laterals. Central tooth slightly broader behind, the length rather more than twice the greatest breadth; the reflexed portion short, with a minute cutting point. Laterals with the reflexed portion nearly as long as the base, triangular, slightly sinuated on the inner and notched on the outer side. Cutting points two, the inner one large, the outer small. The large cutting point is simple in the inner laterals, but carries a small denticle in the outer ones. Marginal teeth from three to many dentate, getting longer and narrower outwards. Length of the radula rather more than twice its breadth. Transverse rows of teeth nearly straight.

Ova attached to stones or water plants in gelatinous lumps of 10–20 together.

This species much resembles *L. glutinosa* of Europe, but in that species the mantle is represented as covering nearly the whole of the shell. I have not been able to compare the dentition.

LIMNÆA (AMPHIPEPLEA ?) AMPULLA, sp. nov. Pl. xii., fig. 2.

Shell ovate, very thin and fragile, semi-transparent, slightly longitudinally plaited, without any spiral lines, yellowish horn-colour or greenish, rarely with a white spiral band on the centre of the body whorl. Whorls $3\frac{1}{2}$, the last swollen; spire acute, short, about one-fifth of the length of the whole shell; suture rather deep. Aperture oval, the outer lip thin, not reflected; inner lip broadly reflected and thickened on the columella, but not covering the umbilicus; columella plait well marked. Length .4; breadth .27; aperture, long .28, broad .17 inch.

Hab. Arthur's Pass (Mr. Dominick Brown and Mr. Cheeseman); Lake Lyndon (Mr. J. D. Enys).

Dentition (pl. xii., fig. 8), 28–1–28, of which about 9 are laterals. Central tooth broader behind, the sides concave; reflexed portion moderate with a well marked point. Laterals with the reflexed portion oval, nearly as large as the base, with a trifid cutting point projecting over the next row of teeth; marginals normal.

This species appears to be near *L. huonensis* (Tenison-Woods) from Tasmania, but the dentition of that species is not known. From *L. peregra* (Müll.) it differs in wanting the spiral striæ on the shell, and considerably in the dentition.

LIMNÆA LEPTOSOMA, sp. nov. Pl. xii., fig. 3.

Shell ovate, acuminate above, glossy, rather strongly longitudinally striated, and with four or five obsolete distant spiral ridges on the body whorl: pale horny white with indications of darker spiral bands near the mouth. Whorls 4, rather flattened; suture deep. Aperture ovate, occupying two-thirds of the length of the shell; outer lip thin and straight, inner lip callously reflexed over the body whorl, and completely covering the umbilicus. Columella plait not very distinct. Length .47; breadth .27; aperture, long .34, broad .20 inch.

Hab. Wellington.

I have two specimens only. The animal and dentition are unknown.

LIMNÆA TOMENTOSA, Pfeiffer. Pro. Zool. Soc. of London, 1854, p. 297 (*Succinea*); Reeve, Conch. Icon., *Succinea*, f. 81.

Hab. Auckland (Mr. Justice Gillies).

Dentition (pl. xii., fig. 9). Central tooth broader behind, length nearly three times the breadth, the reflexed portion small. Laterals rather broad, the reflexed portion not half the length of the base, hollowed on the outer side, bicuspid, with two nearly equal cutting points.

LIMNÆA TENELLA, sp. nov. Pl. xii., fig. 4.

Shell small, oblong, not glossy, longitudinally striated, olive horny. Whorls 4, rather flattened, apex blunt. Aperture ovate, less than half the

entire length of the shell; peristome simple, the inner lip slightly reflexed, not covering the umbilicus; columella plait small. Length $\cdot 18$; diameter $\cdot 07$; aperture, long $\cdot 07$, broad $\cdot 05$ inch.

Hab. River Heathcote, Christchurch.

Animal yellowish white, semi-transparent, the head between the eyes and the centre of the rostrum yellowish brown. Foot emarginate in front; tentacles triangular, flattish, very short. Eyes triangular.

Dentition 20–1–20, of which about 6 or 8 are laterals. Pl. xii., fig. 11.

Central tooth quadrate, the length more than twice the breadth; reflected portion about two-fifths of the base. Inner laterals with the reflected portion deeply excavated on the outer side, bicuspid, the inner cusp with its point being the larger; cutting points not reaching to the posterior margin of the base. Outer laterals with the reflected portion not excavated, the outer point small; the inner large, projecting beyond the base, often bidenticulate. Marginals normal.

This species has the habit of leaving the water like *L. truncatula*, but from that species it differs in the shell, in the animal, and in the dentition.

LIMNÆA PUCILLA, sp. nov. Pl. xii., fig. 5.

Shell small, oblong, glossy, translucent, finely longitudinally striated. Whorls 4, rounded, aperture oval, half the length of the shell; peristome simple, the inner lip reflexed, covering the umbilicus; columellar plait obsolete. Length $\cdot 16$; diameter $\cdot 10$; aperture $\cdot 08$ inch.

Hab. Auckland.

I have only seen two dead specimens of this species, and have not been able to examine the dentition. The shell somewhat resembles that of *L. truncatula*, but is, I think, quite distinct; and this is also the opinion of Professor A. P. Thomas, to whom I showed the specimens before venturing to describe them.

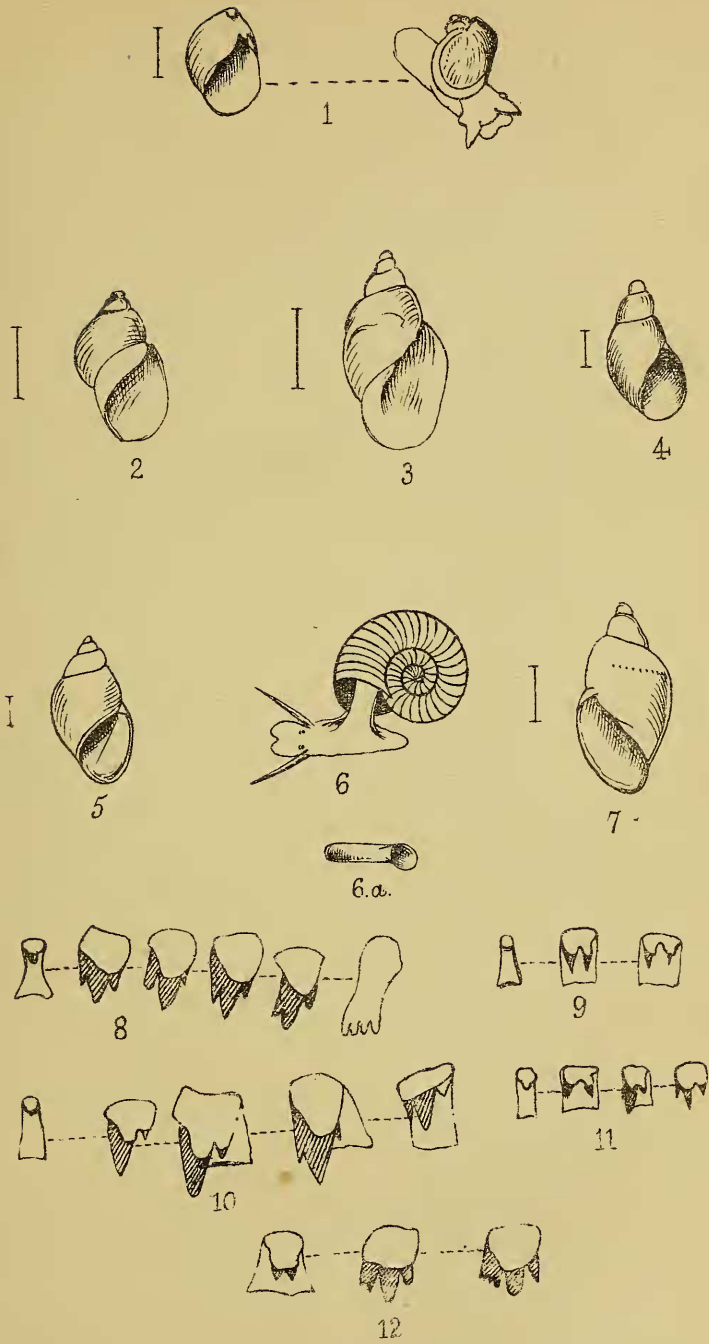
BULINUS ANTIPODEUS, Sowerby in Reeve's Conch. Icon., Physa, f. 37 (1873).

Hab. In lakes from Auckland to Otago. This is our largest species; the whorls are never keeled. The animal and dentition are unknown. Apparently allied to *P. auriculata*, Gassies, from New Caledonia.

BULINUS VARIABILIS, Gray in Dieffenbach's New Zealand, ii., p. 248 (1843). *Bulinus gibbosus*, Hutton, Trans. N.Z. Inst., xiv., p. 155, pl. iv., f. c., q. and v. (not of Gould). *Physa novæ-zealandiæ*, Sowb. Conch. Icon., f. 29 (1884). *Physa guyonensis*, Tenison-Woods, Pro. Lin. Soc. of N.S.W., iii., p. 138, pl. 13, f. 4. (1878).

Hab. Throughout New Zealand.

This species is smaller than the last. The whorls are rounded, but sometimes show traces of a keel. The shell is figured in pl. xii., f. 7, the dentition in Trans. N.Z. Inst., vol. xiv., pl. 4.



NEW ZEALAND LIMNÆIDÆ.

